

AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all earlier versions:

Claim 1 (currently amended). A hydrocarbon well-test flare nozzle for a hose or fixed pipework installation, the nozzle adapted for forming a solid wall of fluid around a flare in a hydrocarbon well-test operation and comprising:

a nozzle body;

a channel extending through the nozzle body; and

a fluid deflector having a deflecting surface which extends beyond an outer width of the body arranged at or near a downstream end of the channel, and wherein the fluid deflector and the nozzle body have substantially parallel surfaces determining the direction of flow of the fluid as it leaves the nozzle;

wherein the fluid flow deflector is arranged at or near a downstream end of and the nozzle body together define a width of an opening from the channel at or near said downstream end, wherein a position of such that the fluid deflector and is adjustable relative to the nozzle body together define a circumferentially continuous outlet to permit fluid to leave the nozzle as a solid wall of fluid vary the width of the channel opening to thereby provide a self-cleaning mechanism.

Claims 2–4 (canceled).

Claim 5 (currently amended). A nozzle as claimed in Claim 1 Claim 4 wherein at least part of the outlet first channel is defined between the deflecting surface and an outlet surface of the body.

Claim 6 (original). A nozzle as claimed in Claim 5 wherein the deflecting surface and the body outlet surface are substantially parallel.

Claim 7 (currently amended). A nozzle as claimed in Claim 1 Claim 4 wherein the deflecting deflector surface is disposed at an obtuse angle relative to a longitudinal main axis of the body.

Claim 8 (canceled).

Claim 9 (currently amended). A nozzle as claimed in Claim 36 Claim 1 wherein the fluid deflector is movably mounted relative to the body, to enable adjustment of a position of the fluid deflector relative to the body, to facilitate adjustment of the channel opening width of the outlet.

Claim 10 (currently amended). A nozzle as claimed in Claim 36 Claim 1 wherein the channel is provided with a gap or space suitable for accommodating a spacer to alter the position of the fluid deflector relative to the downstream end of the channel, thereby varying the width of said channel opening the outlet.

Claim 11 (currently amended). A nozzle as claimed in Claim 36 Claim 1 wherein the fluid deflector is threadably coupled to the body, such that rotation of the fluid deflector relative to the body selectively advances or retracts the fluid deflector relative to the body, thereby facilitating adjustment of the channel opening width of the outlet.

Claim 12 (canceled).

Claim 13 (currently amended). A nozzle as claimed in Claim 38 Claim 1 wherein the self-cleaning mechanism comprises an actuator and which moves the fluid deflector in response to a detected increase in pressure or a reduction in fluid flow rate as sensed by the one or more pressure sensors, the actuator moving the deflector in response to a detected reduction in fluid or one or more fluid flow rate sensors indicative of trapped debris in the nozzle.

Claim 14 (currently amended). A nozzle as claimed in Claim 1 Claim 4 wherein the fluid deflector comprises the deflecting surface and a central beam or projection which extends extending from the deflecting surface into the body of the nozzle, the central beam being attachable to the body of the nozzle.

Claims 15 – 21 (canceled).

Claim 22 (currently amended). A nozzle as claimed in Claim 46 Claim 16 wherein the nozzle further comprises a filter coupling to couple a filter to an upstream end of the central channel portion.

Claim 23 (currently amended). A nozzle as claimed in Claim 46 Claim 16 wherein the nozzle further comprises a secondary nozzle coupling to couple a secondary nozzle to a downstream end of the central channel portion.

Claim 24 (currently amended). A nozzle as claimed in Claim 1 Claim 29 wherein the fluid deflector is frusto-conical and is thus provided with a frusto-conical deflecting surface is frusto-conical, angled away from the direction of fluid flow.

Claim 25 (canceled)

Claim 26 (currently amended). A kit of parts for a nozzle for forming a water wall around a flare in a hydrocarbon well-test operation, the kit of parts comprising a body, a fluid deflector and a coupling to connect the fluid deflector to the body, wherein the kit of parts when assembled forms the nozzle comprising:

the body, wherein the body has an inlet and an outlet;
a channel extending through the body between the inlet and the outlet; and

the fluid deflector having a deflecting surface which extends beyond an outer width of the body coupled to the body and arranged at or near a downstream end of the channel adjacent the body outlet;

wherein the fluid deflector is arranged at or near a downstream end of and the body together define a width of an opening from the channel at or near said downstream end, said channel opening width being variable by adjusting a position of such that the fluid deflector relative to and the body together define a circumferentially continuous outlet to permit fluid leave the nozzle as a solid wall of fluid.;

wherein the body inlet, the body outlet and the fluid deflector are arranged on a longitudinal axis of the body such that, in use, the fluid flows from the body inlet along the channel to the body outlet and impinges on the fluid deflector with minimal energy loss prior to impingement on the fluid deflector;

~~wherein the nozzle comprises a self-cleaning mechanism for adjusting the channel opening width; and~~

~~wherein the fluid deflector determines the direction of flow of fluid as it leaves the nozzle, wherein the fluid leaving the nozzle forms a water wall for heat suppression near the flare.~~

Claims 27–29 (canceled).

Claim 30 (currently amended). A nozzle as claimed in Claim 7 wherein the deflector is disposed at an obtuse angle is of approximately 105 degrees relative to the main axis of the body.

Claims 31 – 35 (canceled).

Claim 36 (new). A nozzle as claimed in Claim 1 wherein a width of the outlet is variable by adjusting a position of the fluid deflector relative to the body.

Claim 37 (new). A nozzle as claimed in Claim 36 wherein the nozzle comprises a mechanism for adjusting the width of the outlet, which is a self-cleaning mechanism.

Claim 38 (new). A nozzle as claimed in Claim 37 comprising one or more pressure sensors, one or more fluid flow sensors, or a combination thereof.

Claim 39 (new). A nozzle as claimed in Claim 1 comprising one or more temperature sensors.

Claim 40 (new). A nozzle as claimed in Claim 1 comprising one or more gas sensors.

Claim 41 (new). A nozzle as claimed in Claim 40 wherein the one or more gas sensors are configured to sense gas composition.

Claim 42 (new). A nozzle as claimed in Claim 1 comprising one or more one or more pressure sensors, one or more fluid flow sensors, one or more temperature sensors, one or more gas sensors, or a combination thereof, located in the fluid deflector.

Claim 43 (new). A nozzle as claimed in Claim 1 comprising one or more one or more pressure sensors, one or more fluid flow sensors, one or more temperature sensors, one or more gas sensors, or a combination thereof, embedded in a front surface of the fluid deflector.

Claim 44 (new). A nozzle as claimed in Claim 1 comprising one or more one or more pressure sensors, one or more fluid flow sensors, one or more temperature sensors, one or more gas sensors, or a combination thereof, located in the body.

Claim 45 (new). A nozzle as claimed in Claim 14 wherein the central beam or projection is attachable to the body.

Claim 46 (new). A nozzle as claimed in Claim 14 wherein the channel comprises a central portion extending through the central beam or projection of the fluid deflector.